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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/560,848	12/15/2005	Gijsbertus Franciscus Roovers	SPIN1	2105

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EXAMINER	
IRVIN, THOMAS W	
ART UNIT	**PAPER NUMBER**
3657	

NOTIFICATION DATE	DELIVERY MODE
09/09/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/560,848	ROOVERS ET AL.	
	Examiner	Art Unit	
	THOMAS IRVIN	3657	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 July 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 23 July 2010 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2-7, 10-17, 19-24, 26-30, and 32-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaneko et al. (4,909,086) in view of Searle (GB2312193).

In Re claims 2 and 26, Kaneko et al. disclose a transmission system (fig. 1), comprising: a drive wheel (2), a driven wheel (3), and a coupling belt (4) having a first belt half (upper) and a second chain half (lower); a tension difference measuring device comprising a transverse force sensor (16) arranged within the span of the chain, provided with measuring means for providing an electric measurement signal that is

proportional to the forces exerted to the sensor by the chain parts. Kaneko et al. fail to teach the specifics of the force sensor and the chain.

Searle teaches, with reference to fig. 1, a chain transmission transverse force sensor (C) arranged between the drive wheel (B1) and the driven wheel (B2), and having a first contact face (top half, see arrow) touching the first chain half at an inner side of the chain, and a second contact face (bottom half) touching the second chain half at an inner side of the chain. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the transverse force sensor of Kaneko et al. to have a single wheel located between the drive wheels, as taught by Searle, in order to provide a compact structure for supporting the sensor and measuring the resultant transverse forces produced. The examiner also notes that it would have been obvious to replace the belt transmission with a chain transmission, as a chain and sprockets are far less likely to slip, and can impart more torque.

In Re claims 3-7, and 11-13, the examiner understands the system to include a supporting arm (14) holding the sensor, which measures a vertical deformation of the supporting arm, holding the sensing wheel.

In Re claim 10, said measuring means measure a displacement of the sensing wheels (see fig. 1 of Kaneko et al.).

In Re claim 14, see fig. 1 of Kaneko et al.

In Re claim 15, Kaneko et al. as modified, further teach that the support arm is fixed to a stationary body (15), but fail to teach the support arm being fixed to the wheel axle of one of the drive or driven wheel, however, it would have been obvious, given the

shape and location of the supports and sensor wheel, to have attached the fixed length support arm (14) to one of the axles of the drive or driven wheels, in order to reduce packaging space and utilize existing support mounts.

In Re claims 16 and 35, see strain gauges (16) of Kaneko et al.

In re claims 17 and 32, Kaneko et al. as modified, fail to disclose a sound production counteracting material. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the sensor wheels to be manufactured of a sound production counteracting material as a matter of simple engineering design choice to quiet the transmission. Also note MPEP Section 2144.07, which states that the selection of a known material based on its suitability for its intended use supports a prima facie obviousness determination.

In Re claims 19, 20, 33, and 34, Searle further teach utilizing a transverse force sensor arrangement on a bicycle.

In Re claim 21, given the structure of the transmission system of Kaneko et al, as modified, as described above, the method steps would be inherently performed during normal operation of the device.

In Re claims 22-24, the examiner understands the system to include a supporting arm (14) holding the sensor, which measures a vertical deformation of the supporting arm, holding the sensing wheel.

In Re claims 27 and 28, the examiner understands the system to include a supporting arm (14) holding the sensor, which measures a vertical deformation of the supporting arm, holding the sensing wheel.

In Re claim 29, see fig. 1 of Searle.

In Re claim 30, Kaneko et al as modified, teach the claimed invention except an elongated hole for mounting the transverse force sensor. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have included an elongated hole in the support arm to allow for adjustment of the mounting location of the transverse force sensor, since it has been held that the provision of adjustability, where needed, involves only routine skill in the art. In re *Stevens*, 101 USPQ 284.

Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaneko et al. (4,909,086) in view of Searle (GB2312193) as applied to claims 2 and 10 above, and further in view of Todd et al. (2003/0087713).

In Re claims 8 and 9, Kaneko et al. as modified, fail to teach two convex surfaces in contact with the chain.

Todd et al. teach using, in a chain transmission, a shoe (30) engaging the chain (16) to measure tension on the chain. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have replaced the sensor wheel of Kaneko et al. as modified, for two convex shoes, as taught by Todd et al., in order to increase the contact with the chain, and thus the sensitivity to actual tension imparted by the rider, and not unintentional vibration.

Claims 31 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaneko et al. (4,909,086) in view of Searle (GB2312193) as applied to claim 27 above, and further in view of Nicolau (3,832,899).

In Re claim 31, Kaneko et al. as modified, fail to disclose specifics of the support arm.

Nicolau teaches a dynamometrical deflection measuring device having a two-part primary/secondary support arm (5,6), understood to meet the limitations of a cut-away, wherein one of the support arms includes at least two bridge parts, understood to be the mounting points. A sensor (7) is mounted on a side of one of the support arm bridge parts. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the transmission device of Searle to include the support arrangement taught by Nicolau, in order to provide a compact structure for supporting the sensor wheel.

In Re claim 36, see strain gauges (16) of Kaneko et al.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kaneko et al. (4,909,086) in view of Hordnes et al. (5,445,036).

Kaneko et al. disclose a transmission system comprising: a drive wheel (2), a driven wheel (3), and a belt (4), a tension difference measuring device comprising a transverse force sensor (11,12), with measuring means (16) for providing an electric signal that is proportional to a transverse force component. Kaneko et al. fail to teach that the sensor is one of the drive or driven wheels.

Hordnes et al. teach a torque sensor with the concept of having a transverse force sensor being one of the drive or driven wheels (see Fig. 1), and wherein the measuring means (36) is adapted for measuring the force exerted to the wheel concerned in a direction substantially perpendicular to the plane defined by the rotation axes of the drive wheel and the driven wheel (col.3, lines 39-47). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the transverse force measuring system of Kaneko et al. to be included in one of the wheels, as taught by Hordnes et al., in order to provide a more compact structure for measuring the torque and tension difference in the drive system. The examiner also notes that it would have been obvious to replace the belt transmission with a chain transmission, as a chain and sprockets are far less likely to slip, and can impart more torque.

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kaneko et al. (4,909,086) in view of Searle (GB2312193) as applied to claim 22, and further in view of Roovers et al. (WO 0130643).

In Re claim 25, Kaneko et al. as modified, fail to disclose a sensor on a bearing of the sensor wheel.

Roovers et al. teach a transverse force sensor (74) rotatably mounted in a bearing (70), wherein the sensor measures the forces caused in the bearing by the chain force (abstract) (p. 25 line 33 – 7 and fig. 9A). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the

transmission system of Kaneko et al., as modified, to include a bearing mounted force sensor, as taught by Roovers et al., to more accurately measure the reaction forces caused by the chain tension imparted by the drive wheel, and decrease the likelihood of unintentionally measuring related chain vibrations.

Response to Arguments

Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to THOMAS IRVIN whose telephone number is (571)270-3095. The examiner can normally be reached on M-F 10-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Siconolfi can be reached on (571) 272-7124. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Thomas Irvin/
Examiner, Art Unit 3657

/Bradley T King/
Primary Examiner, Art Unit 3657